

APR 15 2011


1216481 - R8 SDMS

KOOTENAI DEVELOPMENT IMPOUNDMENT DAM

FEBRUARY 2011 ROUTINE OWNERS INSPECTION

Prepared for: The Remedium Group

Prepared by: Kurt Hafferman, P.E.

BILLMAYER & HAFFERMAN INC.
2191 3rd Avenue East
Kalispell, Montana 59901

Inspection Date: March 04th, 2011

Report Date: April 8th, 2011

INSPECTION DATE:**March 18th, 2011****REFERENCE:****FEBRUARY 2011 ROUTINE OWNERS INSPECTION****OBJECTIVES**

The end of February 2011 routine owner's inspection was conducted on Friday, March 04th, 2011. Personnel included Kurt Hafferman, P.E. from BHI and Brandon Chapman from Chapman Construction.

The inspection was conducted as a routine owner's inspection. Project tasks to be completed included:

1. Safety meeting with Chapman and BHI
2. Check Carney Creek and Lower Rainy Creek flows
3. Check Upper Rainy Creek and Fleetwood Creek inflows
4. Read reservoir level
5. Record Piezometer readings
6. Inspect the embankment dam
7. Inspect principal spillway
8. Inspect outside and inside of drains
9. Read flumes and weirs below the drain outlets.
10. Read staff gauges in all streams above and below drain outlet channel.
11. Decontaminate and depart site

RESULTS

BHI met with Chapman Construction at 10:00 a.m. and the routine owner's inspection began at 10:25 a.m. and ran until 12:54 p.m. The weather was partly cloudy and calm. The temperature ranged between 29° and 35°. There is about 18" of snow on the ground and travel and walking was hazardous. There were no weather impediments that affected the inspection. Copies of photographs from the date of the inspection are included in Appendix 1.

Copies of the Routine Owners Inspection Report as filled out after the inspection and copies of the field notes are provided in Appendix 2. The following are the results of each of the eleven (11) tasks above;

1. Safety Meeting: Brandon Chapman is assigned as the health and safety officer and is responsible for equipment condition, decontamination procedures and overall KDID site safety. The safety meeting with Chapman Construction included discussion of the work tasks and procedures for the day, snowmobile safety, emergency procedures, adequate clothing and over heating issues and concerns and overall job site safety. Equipment was checked and no issues were found and all personnel were equipped and prepared for the cold and snow conditions. Standard equipment used included: warm weather gear under double Tyvek suits, rubber booties, double vinyl gloves and North® full face mask. Booties were taped at the top and Tyvek suits are taped at the zipper on the outer suit.
2. Carney Creek and Lower Rainy Creek Flows: Flumes CC-02 and LRC-02 were read. Flumes were clear and accurate gauge readings were taken
 - a. The CC-02 Flume was read and the gauge height was recorded at 0.25 ft.

- b. The LRC-02 Flume was read and the gauge height was recorded at 0.38 ft.
3. The Upper Rainy Creek flume was read.
 - a. Due to snow levels above URC-02, the Fleetwood Creek Flume was not included in this inspection.
 - b. The flow in Upper Rainy Creek is unchanged. The URC-02 Flume was read and the gauge height was recorded at 0.38 feet.
4. The reservoir level was below the gauge. The level is estimated to be -0.03 ft., the reservoir is frozen with heavy snow cover with no water visible.
5. All piezometers were read and no anomalies were noted. An update of the piezometer plots is included in Appendix 3.
6. No bulges, erosion or other anomalies or changes were noted on the embankment from the upstream face to the toe.
7. No water has run in the Spillway to date this year, but is expected this spring. No changes have been noted or observed and the trash rack is clean but there is heavy snow around it. Ice dams are possible at the trash rack this spring.
8. Drains were inspected and the flows in the drains and stream channel below the drains were recorded. Generally drain flows decreased with the exception of drains 7 and 8 with the Flume 7-8 gauge showing a slight increase over last months reading. Seepage was noted below Drain 7, but no more than is typically seen. Water is still visibly flowing in drain 2 and BHI will continue to monitored flows closely. Flows out of Drain 12 have been significant for this time of year and are higher than BHI has previously recorded at this time. This will be the first year since BHI began inspections that the precipitation in the basin has been at or above normal. A graduated cylinder was used to check for sedimentation in the water at each drain; none was noted. Drain flows were all recorded as clear and steady.
9. All weirs and drains were read, no anomalies were found. Results are shown in Table 1 below.
10. Gauge height readings from the flumes and weirs instream and below the toe drains were taken. Results are shown in Table 1 below.
11. Initial Personnel decontamination was conducted at the contamination reduction site by inspection and brushing the snowmobiles. As snowmobiles were used for access and due to snowy conditions, equipment could not be pressure washed. Final removal of the inner Tyvek suit and removing the mask, took place at the support trailer.

The readings from all of the inflow and outflow streams, including the flumes, weirs and reservoir levels are shown in Table 1 below. Table 2 shows the net difference between inflows and outflows on the day of the inspection.

Table 1: Flow Measurement Results

Station	GH Reading (ft.) GH Reading last Month	GH Reading (ft.) GH Reading this Month	GH Reading Difference from last month.	Flow (gpm)/VOL (AF) last Month	Flow (gpm)/VOL (AF) This Month	Flow/VOL Difference from last month.	Temp °F
URC02	0.38	0.38	+0.0	130.6 gpm	130.6 gpm	+0.0 gpm	
Fleetwood Creek Reservoir	N/R	N/R					
F 1-2-3-4	0.14	0.135	-0.005	12.7 gpm	11.85 gpm	-0.85 gpm	41°F
W 5	0.04	0.02	-0.02	0.38 gpm	0.07 gpm	-0.31 gpm	41°F
D6	0.916	0.938	-0.022	154.64 gpm	114.2 gpm	-40.44 gpm	
F 7-8	0.12	0.14	+0.02	6.55 gpm	9.07 gpm	+2.52 gpm	41°F
W 12	0.208	0.193	-0.015	22.75 gpm	18.90 gpm	-3.85 gpm	
F -Seep	Leak	Leak					
LRC01	0.20*	0.21	+0.01	364 gpm*	450 gpm	+86.0 gpm	
CC02	Frozen	0.25			166.05 gpm		
LRC02	0.45	0.46	+0.01	514 gpm	532 gpm	+18 gpm	
LRC06	Frozen	0.51			624 gpm		

N/R - Not Read due to access

B/G - Below Gauge

*Gauge Replaced to match flume repairs

Table 2: Total Flows

Total Flows	
Inflows Above Reservoir at URC02	130.6 gpm
Outflow Below Reservoir above CC02	365.95 gpm
Difference	+235.35 gpm

DISCUSSION

Site Access

Access to the site was obtained with 2 snowmobiles. Brandon Chapman was the onsite health and safety, equipment and personnel safety officer. Kurt expressed that due to continued winter conditions, personnel must be careful not to physically exert themselves in deep snow, to use vehicles to travel as much as possible and to use the buddy system on all tasks. Other than accessing the Fleetwood Creek flume, a full inspection was accomplished.

During this month's inspection, one of the snowmobiles overheated at the beginning of the inspection and could not be started. This resulted in the machine being left behind and both inspection participants riding on a machine only designed for one person. This in turn made travel more hazardous and increased the potential for dangerous conditions on the site. If the second machine had failed, personnel would have had to walk out of the site to retrieve the machine left behind or get additional equipment to complete the inspection. As it was the inspection was successfully completed and the abandoned machine was started at the end of the inspection and all equipment was departed from the site.

In the future thought should be put into winter inspection procedures to plan for possible equipment failures and provide a plan that will ensure a safe departure from the site. One possible option is to provide a backup vehicle at the amphitheatre in the event of an emergency or equipment failure to reduce personnel fatigue and allow a expeditious exit of the site for help if needed. Another option would be to keep the road plowed up to the amphitheatre. This would allow for proper decontamination procedures year round at the contamination reduction zone with the use of water. Consideration to winter access options in the future should also anticipate emergency access requirements in the event of some form of dam failure.

Surface Water Flows

In general inflows, reservoir levels, drain outflows and lower Rainy Creek flows have stabilized. The inflows from Upper Rainy Creek have not changed since last month's inspection and is discharging at 130.6 gpm. The weather has been fluctuating with temperatures as low as -4°F and as high as 51°F since the last inspection. There has been 5.5 inches of precipitation since the January inspection. Typically, December and January are the lowest flow months, but February has been lowest to date this year.

The precipitation in this area as of February 04, 2011 is reported as 77% of normal at Banfield Mountain site which is just northwest of the project, so the water year beginning October 1, 2010 in the project area is dryer than normal so far according to this weather station. As far as snow levels go, the site is at 97% of normal at this time. We would note that the entire Kootenai basin is at 110% of normal. Snow depth has notably increased due to recent storms moving through the area and was around 18 inches as of this inspection. Outflows have increased and are now greater than inflows by 235.35 gpm. All surface water flows are noted as being clear and steady.

Heavy and drifted snow was observed near the trash rack during this month's inspection. Ice damming around the trash rack is possible this spring. Extra care will need to be taken to make sure the trash rack remains clear, weeds are removed from the entrance channel and the spillway is kept clean and clear of debris.

As spring runoff begins, water color changes will need to be checked in Lower Rainy Creek. If stained water is observed, additional site visits may be required to make sure ice damming has not occurred. Chapman Construction knows that after rain or snowmelt events they need to check for water staining in Lower Rainy Creek as it exits the project area. If stained water is noted, a site visit is necessary to determine the source of the staining and make sure the dam is functioning properly.

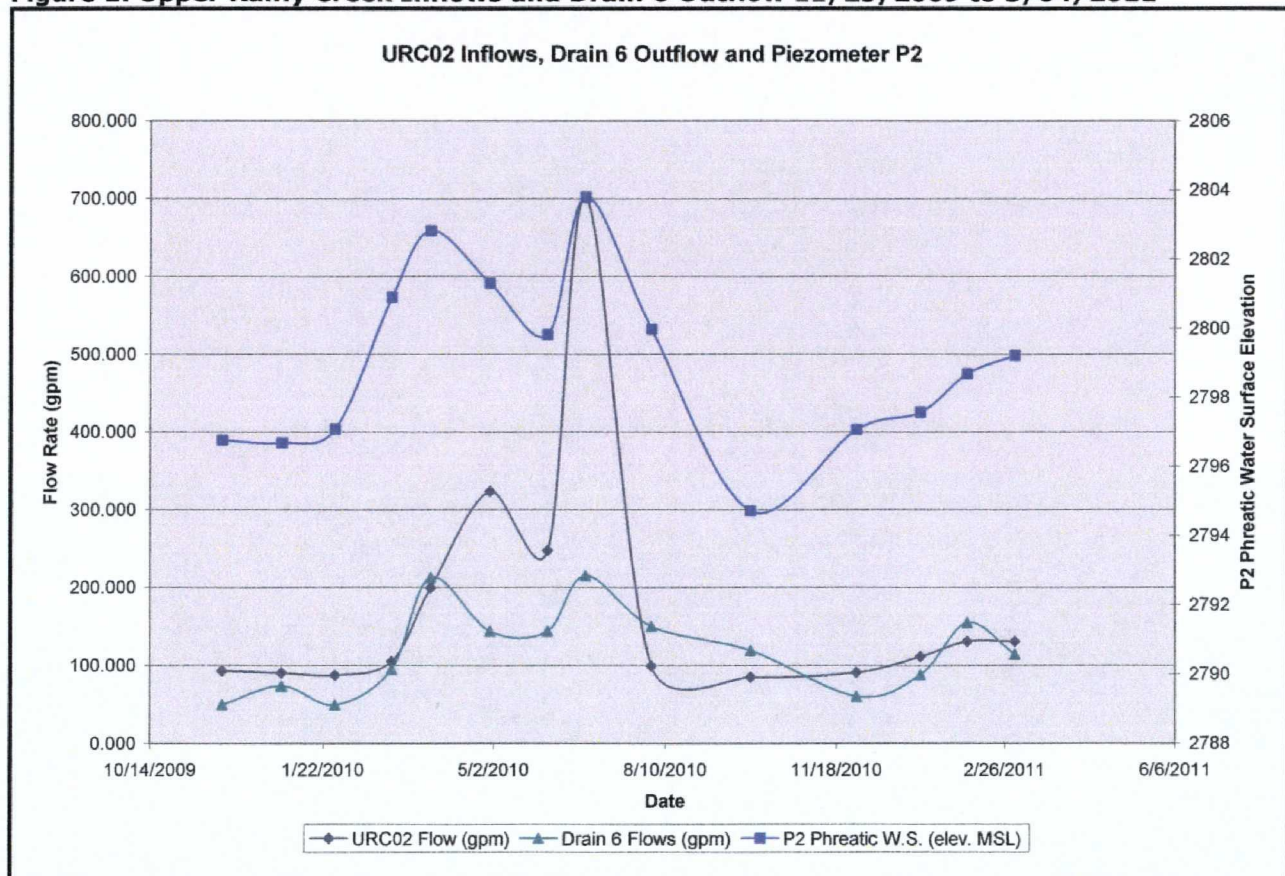
Drains

We are continuing to see flow from Drain 2. BHI has never seen water in Drain 2 during any prior winter inspection. Drain 2 does not typically run much after September and it does not typically start to run again until late may or June. We attribute this flow to the construction repairs made to the drain last year. It has been rumored that the spillway is one of the sources of water that causes Drain 1 and Drain 2 to flow. As we fully expect flows through the spillway this year we will monitor flows to determine if spillway flows affect Drain 1 and Drain 2 flows.

Drain Flows

Drain 6, the main drain at the toe, decreased flow. The decrease was from 154.64 gpm to 114.2 gpm, a decrease of 40.44 gpm, or 26.1% since the February inspection. This indicates that flows are finally stabilizing in the reservoir after multiple rain-on-snow and snowmelt events this year resulted in increased flows in recent months. The drain flows recorded are slightly higher than the same time last year, which correlates with the increase in precipitation so far this year. A graph of the Rainy Creek inflows and drain 6 outflows from November 25th of 2009 to this inspection is shown in Figure 1 below.

Figure 1: Upper Rainy Creek Inflows and Drain 6 Outflow 11/25/2009 to 3/04/2011

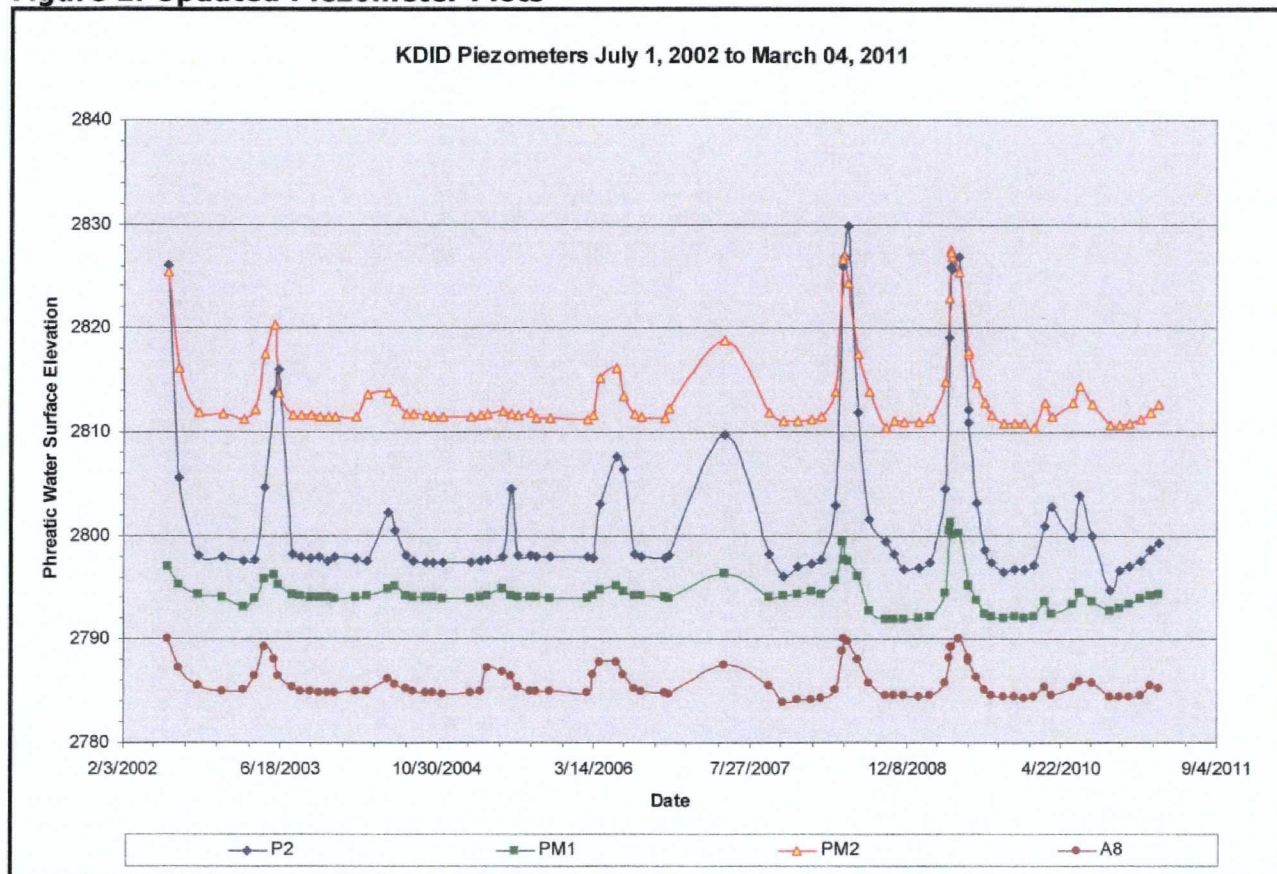


Piezometers

The updated piezometer data is shown in Figure 2 below. It was noted that piezometer readings are still rising with the exception of piezometer A8 which is stable to slightly falling. This has been unusual as we typically have declining inflows and piezometer readings until late February to early April in most years since we have recorded data (2007). It is assumed that the warmer winter temperatures, the late January thaw in the Libby area that caused ice damming and flooding on Flower Creek, and increased precipitation this year that resulted from multiple rain-on-snow events and higher than normal snowmelt for this time of year is the cause of the rising readings. It appears the runoff and rainfall events that have shown up in recent inflows have now routed through the reservoir and embankment and are now

present as higher piezometer readings and increasing outflows. With warmer temperatures expected over the next month, we anticipate increasing inflows and outflows through the dam. We expect that water levels will continue to rise before next month's inspection.

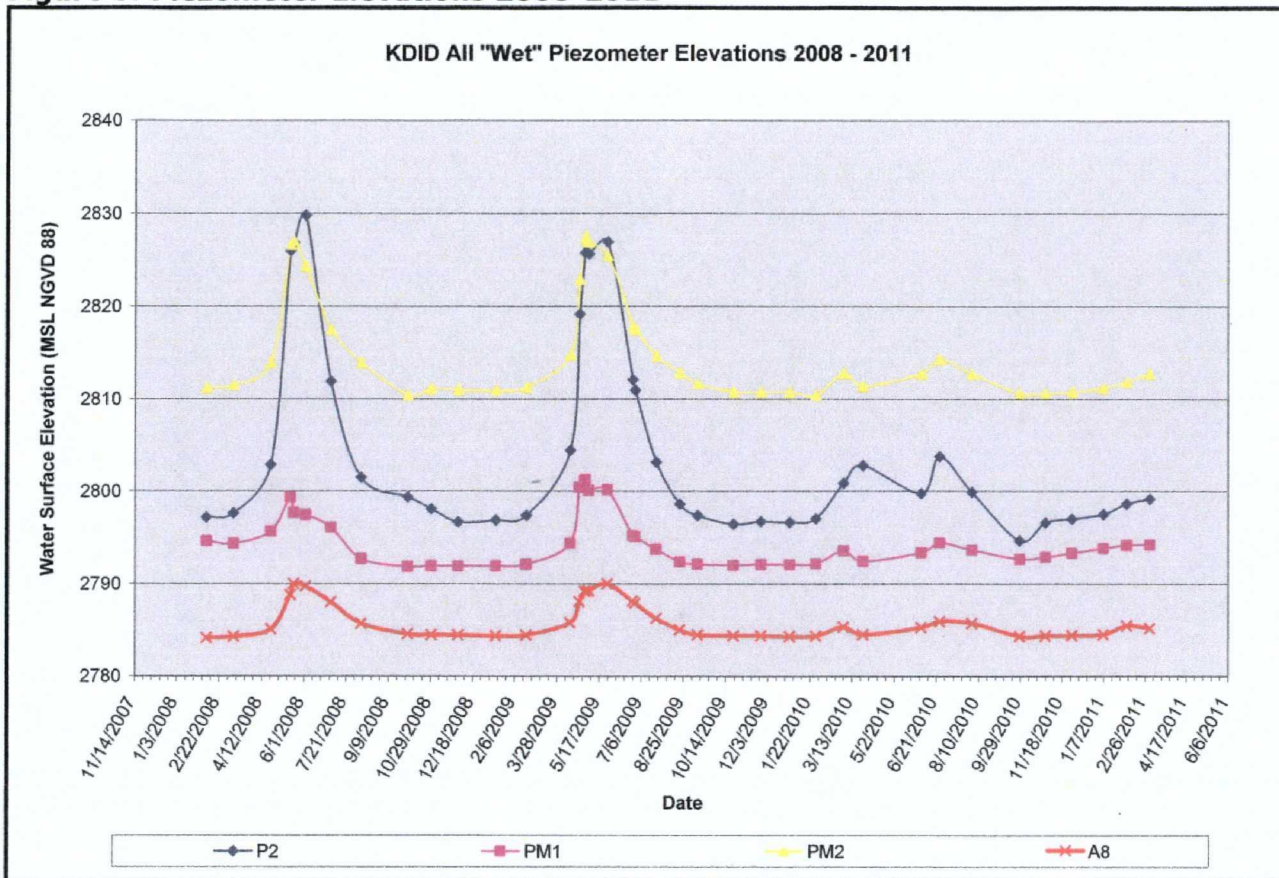
Figure 2: Updated Piezometer Plots



The graph above shows that the phreatic water surface has risen to levels higher than any BHI has on file for this time of year. This winter has had more warming and cooling temperature fluctuations than in the past 10 years. This has led to increased snowmelt before the typical runoff season occurs in April and May.

A second graph of the piezometers in Figure 3 below is a graph of the same piezometers as in Figure 2 above over a shorter period of time. The graph below represents the piezometer data collected since BHI began inspections onsite.

Figure 3: Piezometer Elevations 2008-2011



The graph above again shows a continued rise in piezometers P2, PM1 and PM2 as discussed above which also does not show up as pronounced in previous years at this time. This is, again, likely caused by higher snowpack levels and precipitation than we have seen since BHI began inspections.

HAZWOPER UPDATES

We continue to conduct safety meetings at the beginning of each inspection. All personnel have current certifications, equipment is in good condition and we have no personnel issues. Personnel were again reminded to think about the layers of clothing that will be needed under the Tyvek suits in the winter weather.

The snowmobiles have a very limited carrying capacity and do not allow us to haul water or equipment onsite for decontamination. During this inspection no water was available to use with the pressure wash equipment. Extra care was taken to limit the possibility of contamination onsite. Due to the amount of snow and the hard frozen ground there was no contamination encountered. Extreme care was taken on the site not to encounter water and mud and to stay on the frozen, snow covered ground. As such, the inspection continued as scheduled.

During the decontamination there was no observed dirt or frozen material on personnel or equipment. Decontamination was conducted by brushing the snow off of the equipment and inspecting until no dirt or ice was found. The equipment decontamination was successful and the outer Tyvek suits were removed at the

contaminate reduction area and the snowmobiles were transported to the site trailer. The inside Tyvek suits and masks were removed at the trailer. All decontamination procedures were completed at the support trailer due to logistics.

Clearly, frozen conditions require a special decontamination protocol that is temperature and snow or ice cover related. The protocol for equipment and decontamination in cold weather will require a comparison of the on site conditions to personnel safety, public safety and overall efficiency.

CONCLUSION

No significant anomalies or changes were noted. We are continuing have seen a decrease in inflows this month. Piezometer levels continued to rise while flow through the drains has stabilized. Due to recent warmer temperatures we expect to see rising inflows during next month's inspection. Drain 2 is continuing to flow and we will continue to monitor this drain closely.

All elements inspected show no major issue or concerns this month that have not already been addressed. Inflows and reservoir levels are low but rising as expected. We anticipate flow through the spillway this year as we have sustained nearly normal precipitation levels so far this year. Extra care must be taken to make sure the trash rack and spillway remains clean and clear of debris.

On site work is complicated and made more hazardous by cold weather. Better communication may be needed to have equipment that provides adequate access and reliability for all personnel scheduled to participate in the inspection. Also consideration should be made into emergency procedures while onsite in the event of equipment failure.

RECOMMENDATIONS

1. Reseal the F-Seep Flume: Currently all flows are diverting under the flume and therefore no readings can be recorded at this time. Continue to closely monitor inflow, piezometer readings and drain 6 outflows for fluctuations. Watch for changes in drain 1 and drain 2 flows. Monitor for spillway flows and drain 1 and drain 2 flows to see if there is a correlation.
2. Spillway Flume and Staff Gauge: High spring flows and flows through the spillway are anticipated this spring. We advise to installing a staff gauge and flume in the spillway to record flows through the spillway this spring. It is further recommended that snow pack, precipitation and temperature be monitored to assure personnel is on site or available to be on site in the event of a large storm or rapid snow melt event.
3. Winter Decontamination: It is recommended that a cold weather related personnel, equipment and decontamination protocol be established by BHI and Chapman Construction to provide documented and acceptable procedures for the different conditions and limitations encountered on the site.
4. Safety: Extra care needs to be taken to ensure transportation vehicles are in reliable working condition, especially when backup vehicles are not on the site. As

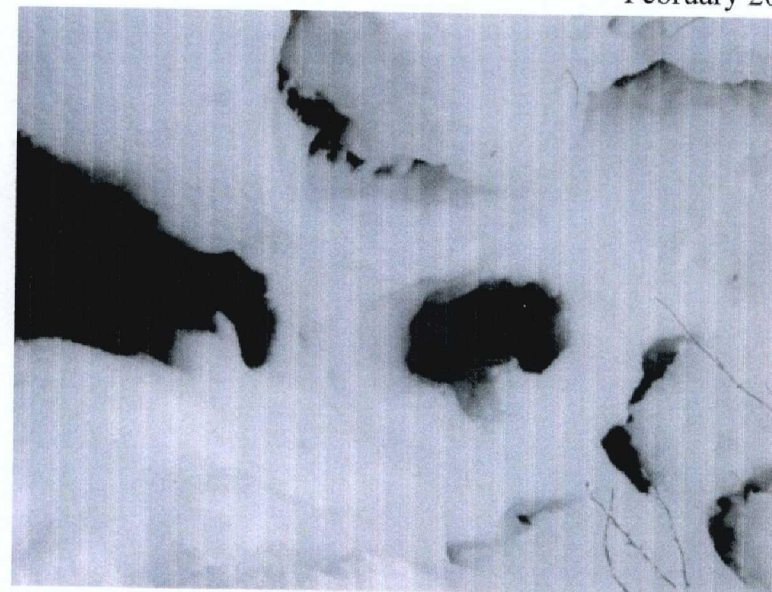
noted in the report one of the snowmobiles overheated and was not able to be started near the beginning of the inspection, this resulted in 2 persons riding a snowmobile designed to only carry 1 person. In the event the second machine failed, at least one person would have to walk out of the site to get help and or another vehicle. For this reason it is recommended that the Emergency Action Plan be updated to include winter access conditions. It is recommended that this include either the plowing of the access road to the amphitheatre, the storing of a backup vehicle for exiting the site or both. Plowing the road is the most viable option in the event of a winter site emergency was to occur. This would also facilitate pressure washing decontamination procedures in the winter time at the contamination reduction zone. Further and possibly more important, in case of injury, a truck could be available near the work zone to facilitate safe removal of personnel from the site.

APPENDIX 1

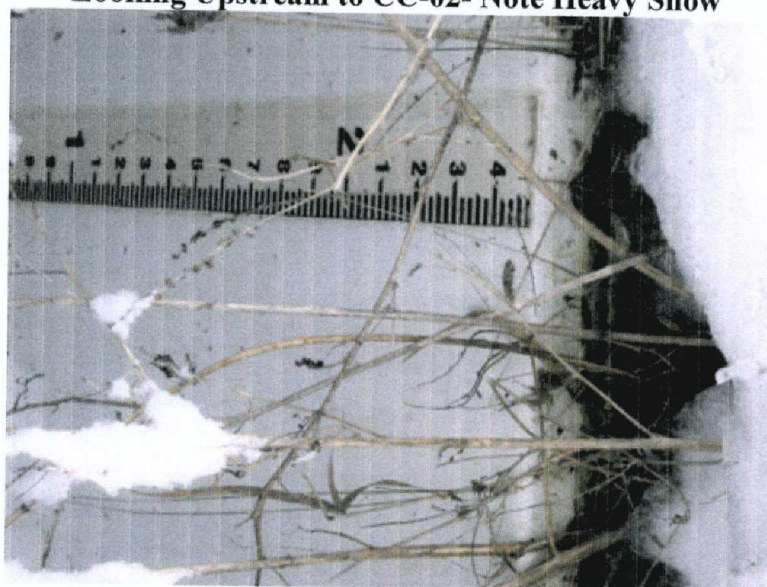
SITE PHOTOGRAPHS



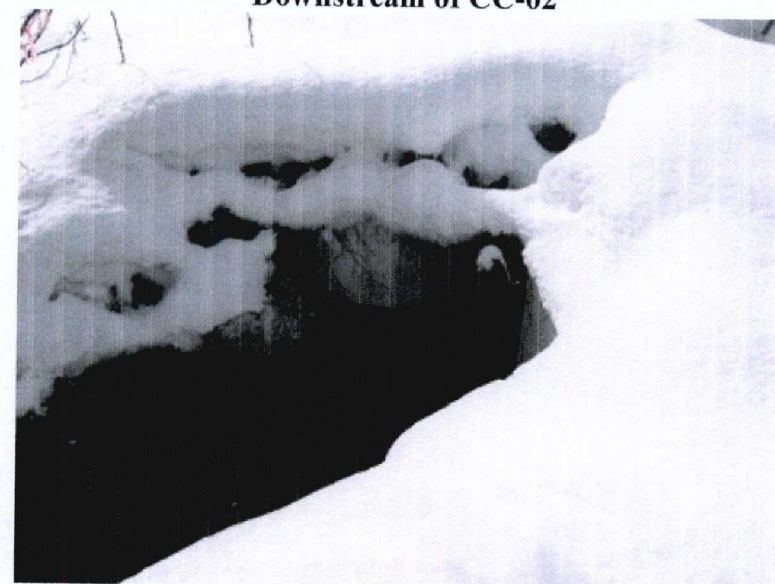
Looking Upstream to CC-02- Note Heavy Snow



Downstream of CC-02



CC-02 Staff Gauge



Upstream side LRC-02



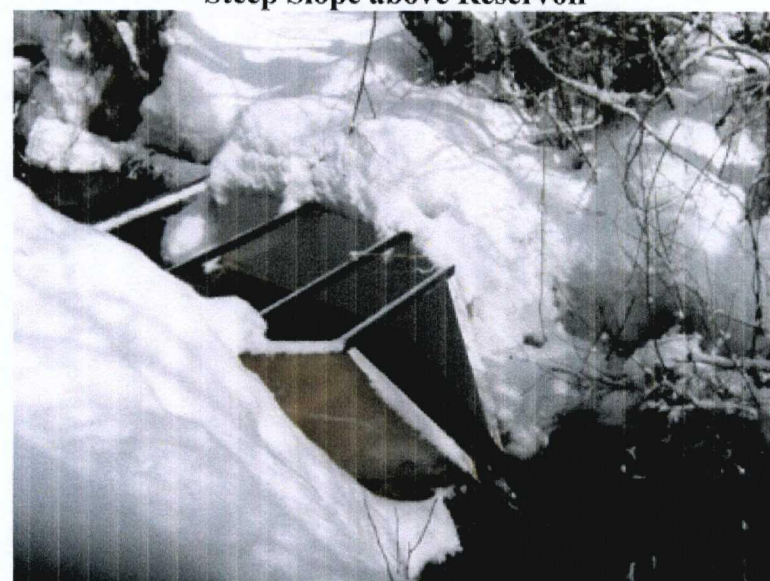
Outlet LRC-02



Steep Slope above Reservoir



Downstream LRC-02



URC-02 Flume Outlet



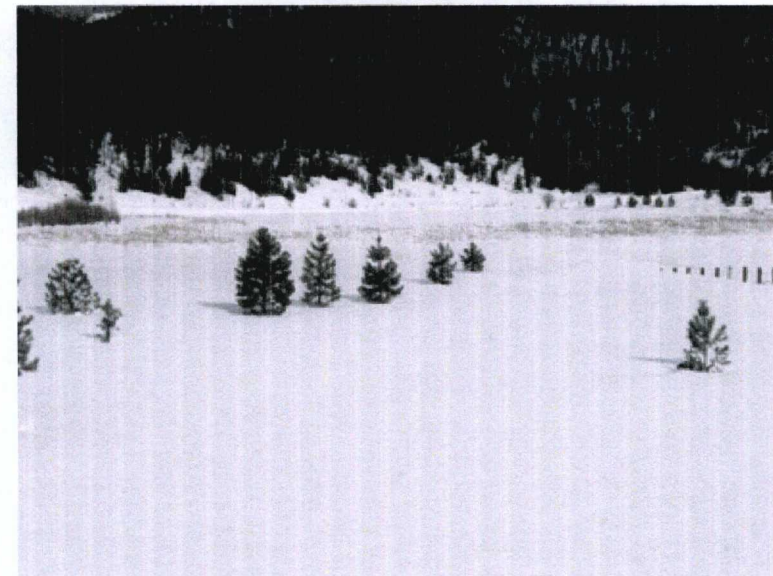
Upstream Dam Crest



Piezometer P1



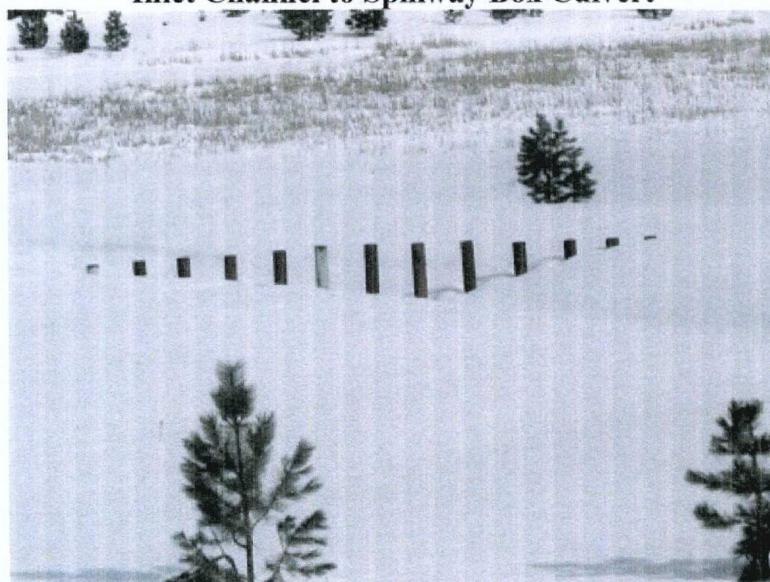
Looking out over Reservoir from Piezometer P



Heavy Snow near Trash Rack



Inlet Channel to Spillway Box Culvert



Trash Rack



Culvert from Drains 1 and 2



Outside Drain 2



Inside Drain 2



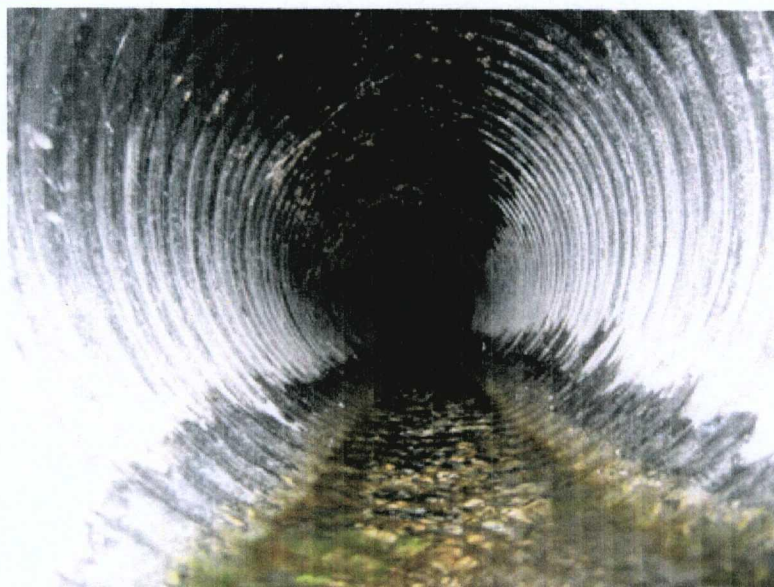
Snowmelt around Drain 3



Inside Drain 1



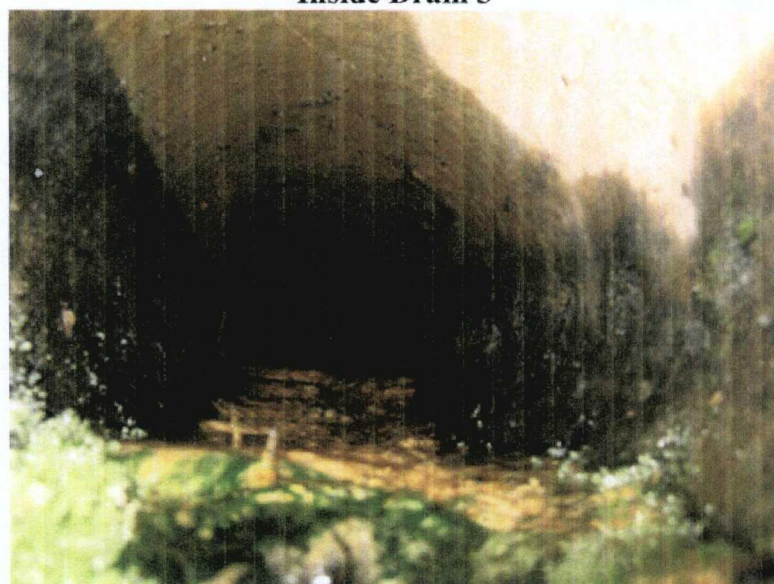
Snowmelt around Drains 3 and 4



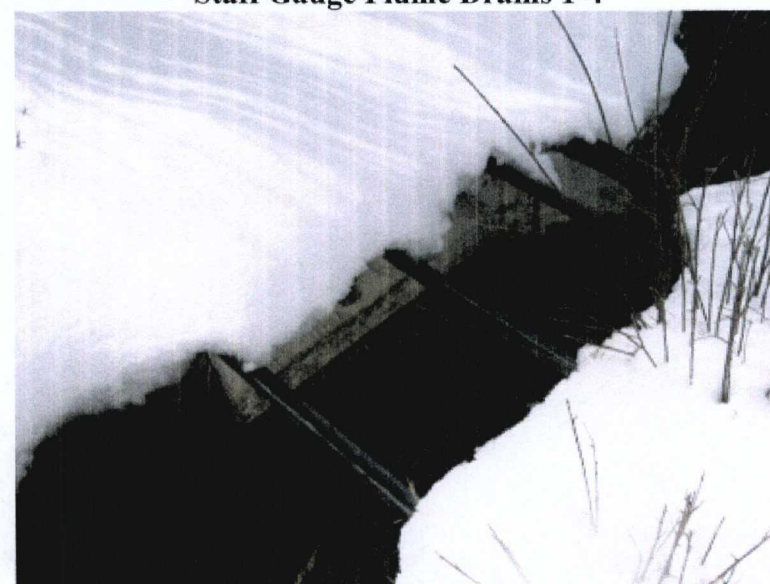
Inside Drain 3



Staff Gauge Flume Drains 1-4



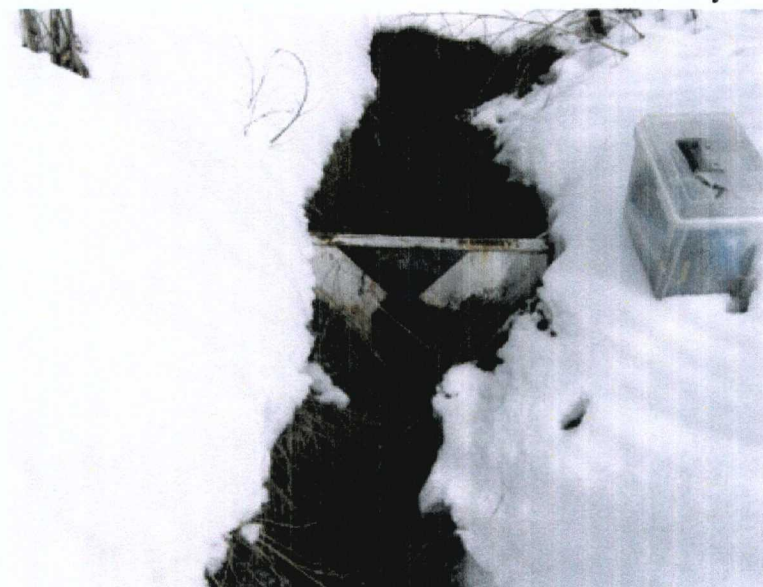
Inside Drain 4



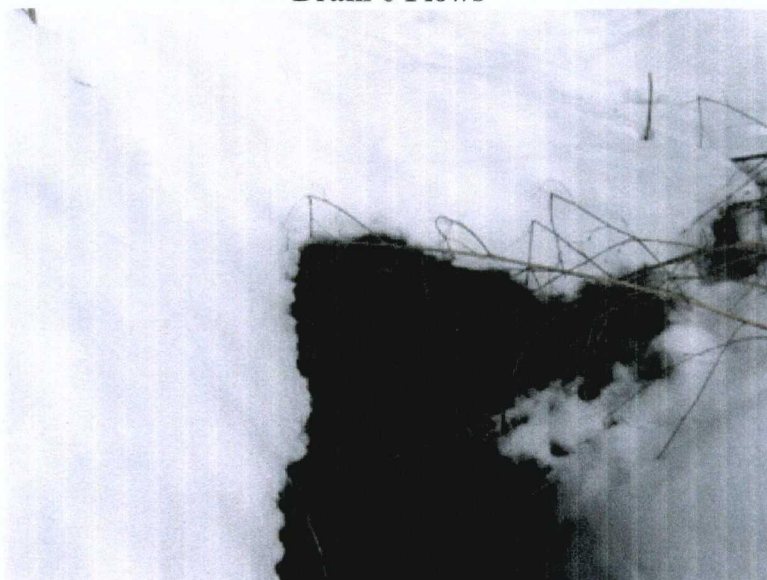
Flume Drains 1-4



Drain 6 Flows



Weir 5 Flow



Outside Drain 5



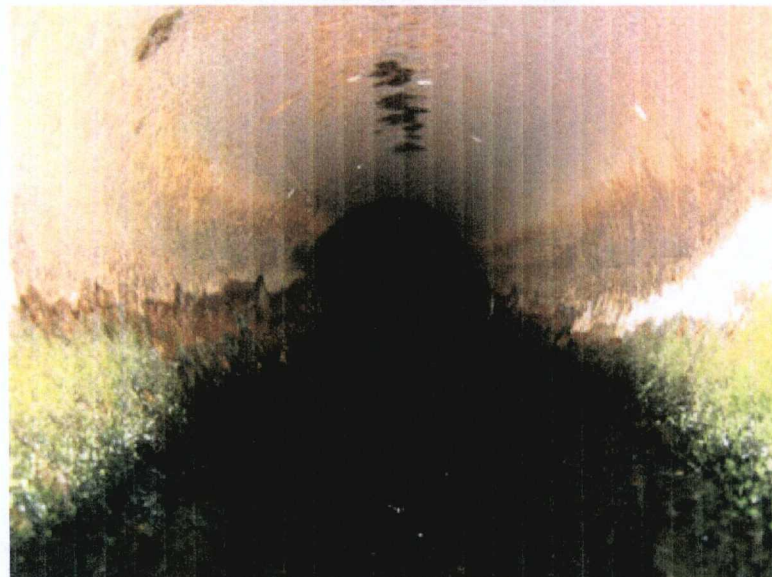
Inside Drain 5



Clean Beaker from Drain 6



Lower Rainy Creek Flows below Drain 6



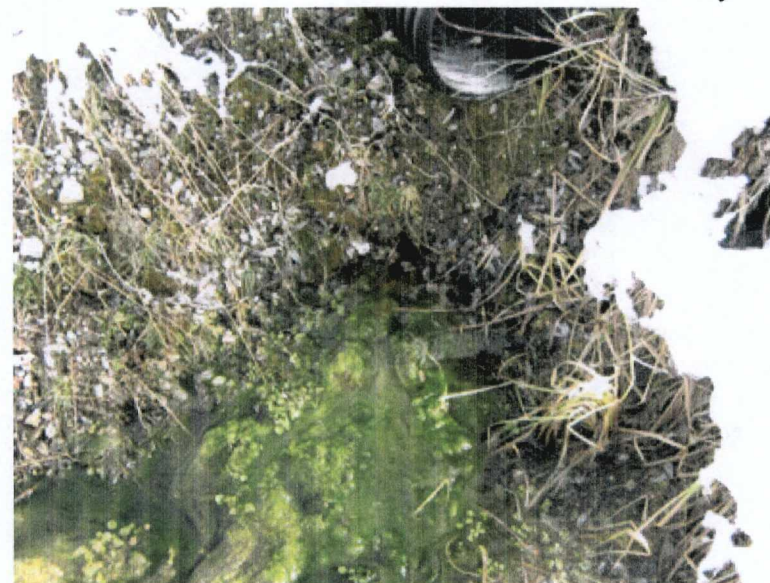
Looking up Drain 6



Flows from Drains 9-12



Flume 7-8 and Drains 7-8



Seepage below Drain 7



Snowmelt around Drain 7



Drain 7 Seepage



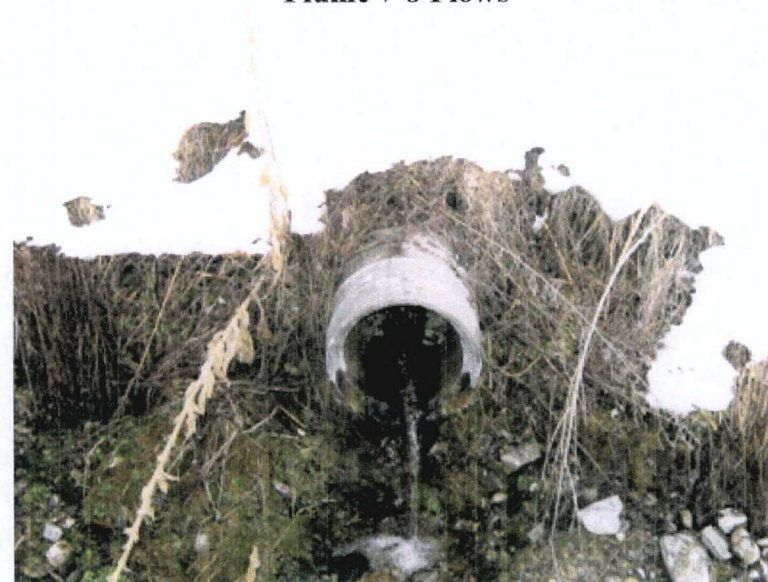
Inside Drain 7



Flume 7-8 Flows



Inside Drain 8



Outside Drain 9



Drain 9 Flow



Flow from Culvert between Drains 9 and 10



Inside Drain 9



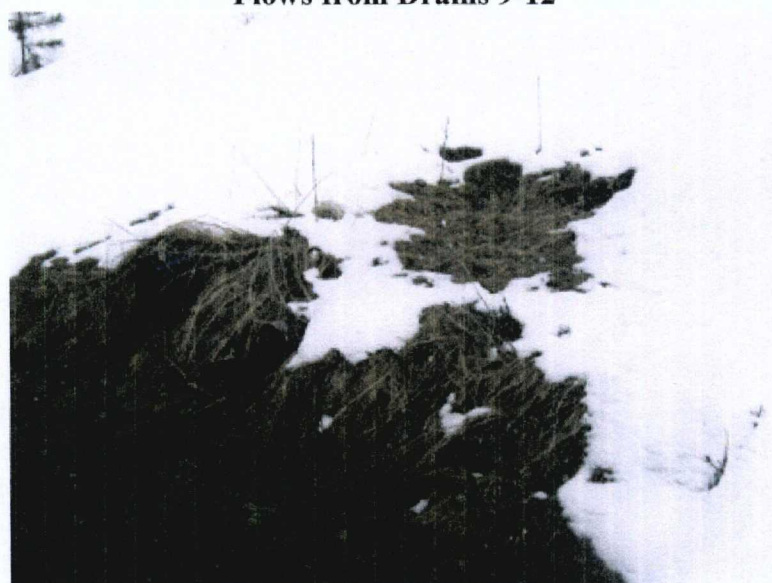
Inside Culvert between Drains 9 and 10



Flows from Drains 9-12



Inside Drain 11



Snowmelt above Drain 11



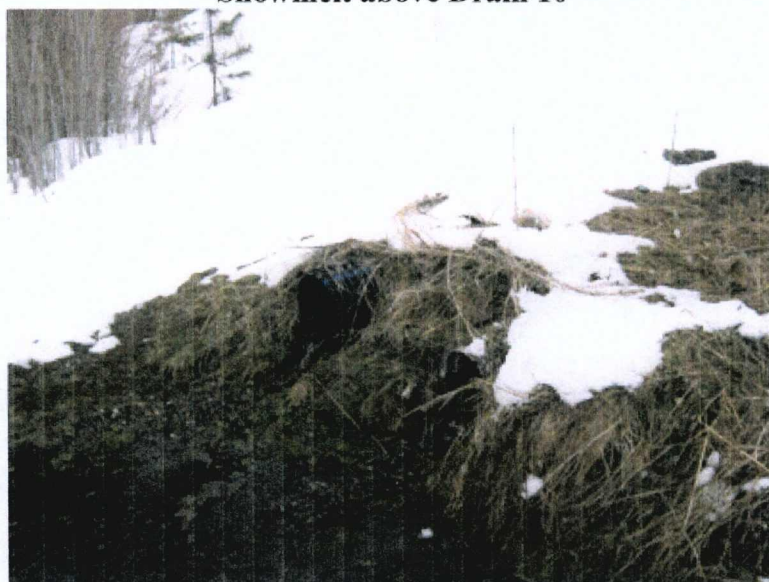
Inside Drain 10



Snowmelt above Drain 10



Weir 12 Flow



Snowmelt around Drains 10 and 11



Drain 12 Flows



Inside Drain 12



Weir 12 below Drain 12



Snowmelt around Drain 12



Drain 12



Drain 12 flows



Flume 7-8 Flow



Flows below Drain 12



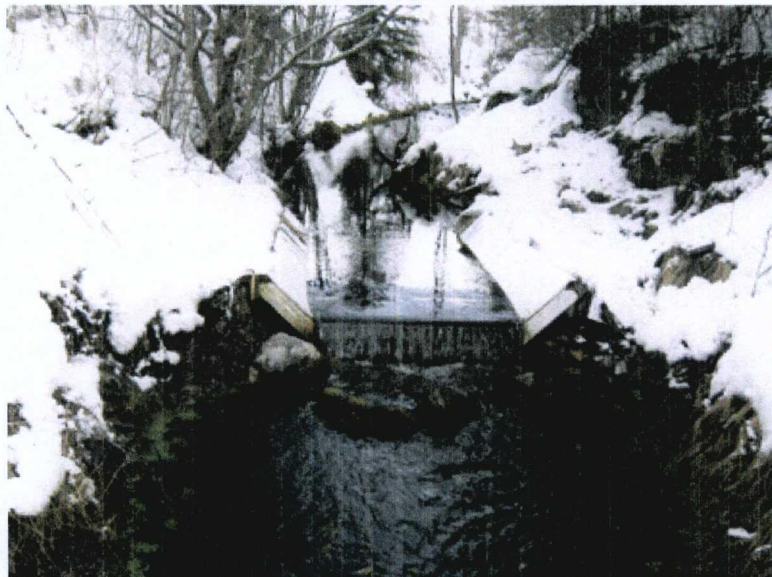
Looking Downstream to LRC-01



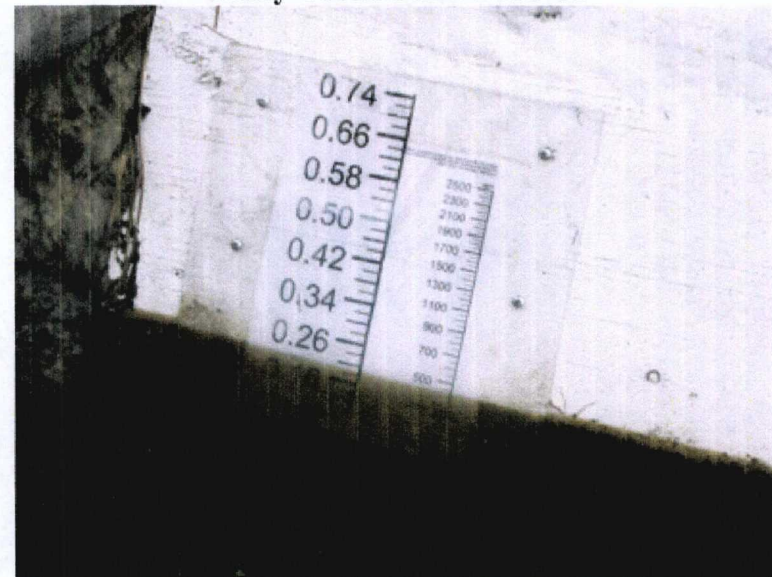
Flows into LRC-01



Rainy Creek below LRC-01



Flow over LRC-01



LRC-01 Staff Gauge



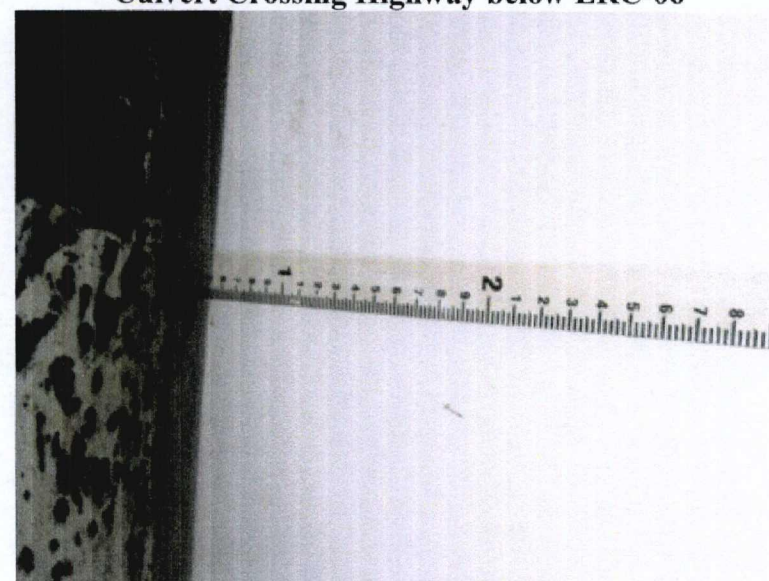
Downstream Dam Face from Drain 12



Culvert Crossing Highway below LRC-06



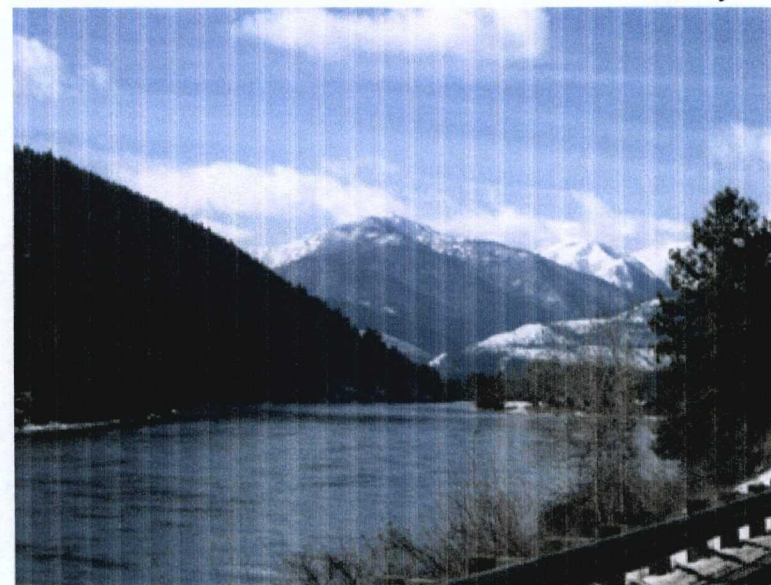
Flows into LRC-06



LRC-06 Staff Gauge



Looking Upstream to LRC-06



Kootenai River below Rainy Creek



Kootenai River below Rainy Creek

APPENDIX 2

PERIODIC INSPECTION REPORT & FIELD NOTES

PRINCIPAL INSPECTOR ON SITE: Kurt Hafferman, P.E.			OBSERVATION DATE (S)		4-Mar-11		
OTHER PERSONNEL ON SITE: Brandon Chapman from Chapman Const.			WEATHER CONDITIONS		Pty, Cldy, cool ~29°, calm, light snow/rain, ±8" of snow on ground		
Work Tasks: Measure flows, check URC02, take reservoir level, measure piezometers, check crack in box culvert, check drains, drain flow, gauge height at LRC01, CC02, LRC02 and LRC09.			EQUIPMENT		Well probe, long fiberglass tape, camera, flashlight, misc. field equip.		
AREA INSPECTED	EMBANKMENT			CHECK ACTION NEEDED			
	ITEM NO.	CONDITION	OBSERVATION	MONITOR	INVESTIGATE	REPAIR	OTHER
CREST	1	GENERAL SURFACE CONDITION	Good, no change				
	2	DISPLACEMENTS	None				
	3	EROSION	None				
	4	CREST ALIGNMENT	Good, no change				
	5	WEEDS OR BRUSH	No change				
	6	ANIMAL BURROWS	No change				
	7	EARTHEN EMERGENCY SPILLWAY	Good, no change				
	8						
	9						
UPSTREAM FACE	10	SLIDES, DISPLACEMENT OR BUDGES	None				
	11	EROSION	None				
	12	WEEDS OR BRUSH	None				
	13	PIEZOMETER CASINGS	Good, no change				
	14	ABUTMENT CONTACTS	Good, no change				
	15	ANIMALS BURROWS	No change				
	16	DISTANCE TO WATER	~800 ft. reservoir at low level				
	17						
	18						
19							
ADDITIONAL COMMENTS, REFER TO ITEM NO. IF APPLICABLE							
1							

KOOTENAI DEVELOPMENT IMPOUNDMENT DAM ROUTINE OWNERS INSPECTION REPORT

PRINCIPAL INSPECTOR ON SITE: Kurt Hafferman, P.E.	OBSERVATION DATE (S)	3/4/11
OTHER PERSONNEL ON SITE: Brandon Chapman from Chapman Const.	WEATHER CONDITIONS	Ptly Cldy, cool -29°, calm, light snow/rain, ±8" of snow on ground
Work Tasks: Measure flows, check URC02, take reservoir level, measure piezometers, check crack in box culvert, check drains, drain flow, gauge height at LRC01, CC02, LRC02 and LRC06.	EQUIPMENT	Well probe, long fiberglass tape, camera, flashlight, misc. field equip.

	ITEM NO.	DOWNSTREAM AND INSTRUMENTATION		CHECK ACTION NEEDED			
		CONDITION	OBSERVATION	MONITOR	INVESTIGATE	REPAIR	OTHER
DOWNSTREAM SLOPE/ AREA INSPECTED	20	GENERAL SURFACE CONDITION	Good no change				
	21	DISPLACEMENTS	None				
	22	EROSION	None				
	23	LIFT ALIGNMENTS	Good				
	24	WEEDS OR BRUSH	No change				
	25	ANIMALS BURROWS	No change				
	26	EARTHEN EMERGENCY SPILLWAY	Good, no change				
	27	SEEPAGE	None				
	28	ABUTMENT CONTACTS	Good, no change				
INSTRUMENTATION	29	PIEZOMETERS	Measured, see attached measurements	X			
	30	WEIRS	Gauges read, see attached	X			
	31	FLUMES	Gauges read, see attached	X			
	32	RESERVOIR LEVELS	Not read - typical low levels	X			
	33	RAINY CREEK INFLOW MEASUREMENTS @ URC02	GH= 0.38, No change	X			
	34	RAINY CREEK OUTFLOW BELOW DAM @ LRC01	GH= 0.21, 450 gpm	X			
	35	STREAM OUTFLOW BELOW MILL POND @LRC02	GH=0.46, 532 gpm	X			
	36	STREAM OUTFLOW FROM CARNEY CREEK @CC02	GH=0.25, 166.05 gpm	X			
	37	STREAM OUTFLOW FROM RAINY CREEK @LRC06	GH=0.51, 624 gpm	X			
	38	FLUME 1-2-3-4	GH=0.135, 11.85 gpm	X			

ADDITIONAL COMMENTS REFER TO ITEM NO. IF APPLICABLE

KOOTENAI DEVELOPMENT IMPOUNDMENT DAM ROUTINE OWNERS INSPECTION REPORT

PRINCIPAL INSPECTOR ON SITE: Kurt Hafferman, P.E.

OBSERVATION DATE (S)

3/4/11

OTHER PERSONNEL ON SITE: Brandon Chapman from Chapman Const.

WEATHER CONDITIONS

Ptly Cldy, cool ~29°, calm, light snow/rain, ±8" of snow on ground

Work Tasks: Measure flows, check URC02, take reservoir level, measure piezometers, check crack in box culvert, check drains, drain flow, gauge height at LRC01, CC02, LRC02 and LRC06.

EQUIPMENT

Well probe, long fiberglass tape, camera, flashlight, misc. field equip.

AREA INSPECTED	INSTRUMENTATION (CONT.) AND DOWNSTREAM TOE AREA			CHECK ACTION NEEDED			
	ITEM NO.	CONDITION	OBSERVATION	MONITOR	INVESTIGATE	REPAIR	OTHER
INSTRUMENTATION (CONT.)	39	FLUME 10-11-12	Removed, no longer used				
	40	FLUME 7-8	GH=0.14, Increase 2.52 gpm	X			
	41	WEIR 5	Low flow 0.07 gpm	X			
	42	WEIR 12	GH=0.193, decrease 3.85 gpm.	X			
	43	DRAIN 6	Decrease 40.44 gpm	X			
	44	SPILLWAY FLOW	None	X			
	45	F-Seep	Leak at flume. No reading	X		X	
	46	Drain 2	Water flowing	X	X		
	47						
DOWNSTREAM TOE	48	ABUTMENTS	Good, no change				
	49	SEEPAGE NEAR TOE	No additional seepage noted this year	X	X		
	50	SEEPAGE DOWNSTREAM OF TOE, LEFT SIDE	Gauge not read	X	X		
	51	SEEPAGE IN STREAM CHANNEL, LEFT SIDE	Not noticed due to snow				
	52	VEGETATION	No Change.				
	53	CULVERT AT LOWER ROAD	Not monitored				
	54						
	55						
	56						

ADDITIONAL COMMENTS, REFER TO ITEM NO. IF APPLICABLE

Item 45 - all flows under flume, reseal with bentonite to resume readings.
Continued Flow observed in Drain 2. Continue to monitor for changes.

Item 46 -

KOOTENAI DEVELOPMENT IMPOUNDMENT DAM ROUTINE OWNERS INSPECTION REPORT

PRINCIPAL INSPECTOR ON SITE: Kurt Hafferman, P.E.

OBSERVATION DATE (S)

3/4/11

OTHER PERSONNEL ON SITE: Brandon Chapman from Chapman Const.

WEATHER CONOITIONS

Ptly, Cldy, cool ~29°, calm, light snow/rain, ±8" of snow on ground

Work Tasks: Measure flows, check URC02, take reservoir level, measure piezometers, check crack in box culvert, check drains, dmin flow, gauge height at LRC01, CC02, LRC02 and LRC06.

EQUIPMENT

Well probe, long fiberglass tape, camera, flashlight, misc. field equip.

AREA INSPECTED	SPILLWAYS			CHECK ACTION NEEDED			
	ITEM NO.	CONDITION	OBSERVATION	MONITOR	INVESTIGATE	REPAIR	OTHER
PRINCIPAL SPILLWAY (BOX CULVERT AND OPEN CHANNEL CHUTE SPILLWAY)	58	ENTRANCE CONDITION	Good, no change				
	59	CENTERLINE CRACK FLOOR	Checked, no visual change	X			
	60	CENTERLINE CRACK CEILING	Checked, no visual change	X	X		
	61	TRANSVERSE JOINTS	No change, same CaCo3 deposits				
	62	GENERAL CONCRETE	Good to excellent, no change				
	63	SEEPAGE OR WATER	No moisture seen	X			
	64	OPEN CHANNEL CONCRETE	Good to excellent, no change				
	65	OPEN CHANNEL JOINTS	Good to excellent, no change				
OPEN CHANNEL STEEP CHUTE SPILLWAY	66	OPEN CHANNEL GENERAL	Good				
	67	JOINTS	Good				
	68	WALL CONCRETE	Visual from above, good				
	69	FLOOR CONCRETE	Visual from above, good				
	70	WALL TOPS	Good				
	71	WEEDS ALONG WALLS	None noted				
	72	STILLING BASIN RIPRAP	Good				
	73	WEED AND BRUSH IN STILLING BASIN	Cleared last fall, will be needed in spring.				
	74						
	75						
	76						

ADDITIONAL COMMENTS, REFER TO ITEM NO. IF APPLICABLE

KOOTENAI DEVELOPMENT IMPOUNDMENT DAM ROUTINE OWNERS INSPECTION REPORT

PRINCIPAL INSPECTOR ON SITE: Kurt Hafferman, P.E.

OBSERVATION DATE (S)

3/4/11

OTHER PERSONNEL ON SITE: Brandon Chapman from Chapman Const.

WEATHER CONDITIONS

Ptty Cldy, cool ~29°, calm, light snow/rain, ±8" of snow on ground

Work Tasks: Measure flows, check URC02, take reservoir level, measure piezometers, check crack in box culvert, check drains, drain flow, gauge height at LRC01, CC02, LRC02 and LRC06.

EQUIPMENT

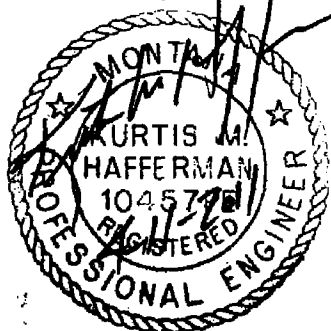
Well pmha, long fiberglass tape, camera, flashlight, misc. field equip.

AREA INSPECTED	RESERVOIR AND UPSTREAM DRAINAGE BASIN			CHECK ACTION NEEDED			
	ITEM NO.	CONDITION	OBSERVATION	MONITOR	INVESTIGATE	REPAIR	OTHER
RESERVOIR	77	LEFT SIDE (TAILINGS SLOPE)	Stable				
	78	RIGHT SIDE	Stable				
	79	RESERVOIR LEVEL	Low level - Below gauge	X			
	80	WETLANDS	Good, no change				
	81	UPPER POND	Full, no change				
	82	DISTANCE FROM UPSTREAM SLOPE	~ 860 ft. typical low reservoir level	X			
	83						
	84						
	85						
UPSTREAM DRAINAGE BASIN	86	PRECIPITATION WY 2010-2011 AS OF DATE OF INSP	Low, 65% of normal	X			
			5.5 inches of precipitation in the last month. Warming weather has resulted in significant snowmelt	X			
	87	RECENT RAINS					
	88	FIRE DANGER	None				
	89	CHANGES	None				
	90	VEGETATION	No change				
	91	RAINY CREEK DRAINAGE	No change				
	92	FLEETWOOD CREEK DRAINAGE	No change				
	93	MINE SITE	Shut Down for winter				
	94						
	95						

ADDITIONAL COMMENTS, REFER TO ITEM NO. IF APPLICABLE

Engineers Certification and Seal

I declare that the data collection and completion of this report titled the February 2011 Routine Owners Inspection Report for the Kootenai Development Impoundment Dam, known as the subject property was completed under my direction. This assessment has revealed the conditions discussed in the inspection form in connection with the property. I declare that the statements made in this report are true to the best of my belief and professional knowledge.



Kurtis M. Hafferman, P.E.

MT PE 10457

Date

Friday March 4, 2011
KID'D ROL

Harman

4

on site @ 10:00 am

fly cloudy cool & 29°F

Safety meeting, tanks, time - tank
emergency, deep snow, machines, equip

BH1 - Kurt Hoffmann

Chagnon - Brandon Chapin

Deput trailer

LR06 - GH - 0.51

CC02 GH = 0.0
= 0.25

LR02 GH = 0.46 clear
no ice

LR02 GH = 0.38 clear

4

Parameters

P1 dry

PM1 51.58
wet

P1- dry

PM2 102.3
wet

P2- 118.10

PM3 dry

P3- dry

PM4 dry

P4- dry

PM5 51.0 bottom
wet

P5- dry

PM6 dry

AB- 7.48

Reservoir - Frozen, heavy snow
GH x - 0.03

3/

Drains

D1 - dry

D2 - low flow clear
x 20 gpm

D3 - mod. flow clear

D4 - low flow, clear

D5 - very low flow

D6 - mod flow, clear

D7 - no flow
flow under drainD8 - low flow moss in the
inlet cleaned outD9 - clear steady flow
some

4/

WT = 41°F

Breaker on D2 drain
clearNote: Seepage around
drains D & 4 is
evident by area of
melted snowNote: Melted snow above
drain 8

5/

D 10 Clear, steady flow

D 11 Clear, steady flow
seepage under D11
same

D12 - Mod flow, clear
steady

LRCO1 - $GH = 0.21$

$Q = 450$ ppm

F 7-8 - $GH = 0.14$

F 1-4 - $GH = 0.138$

D 6 - $GH = 11\frac{1}{4}"$

W 5 - $GH = \frac{1}{4}"$

5/

D10 - higher flows than
D9

W12 - $2\frac{5}{16}$

D12 - Flow from D12
is $\frac{1}{3}$ full. This drain appears
to be running more
than the others

Dam Crest

- Heavy snow
- no changes, no anomalies

Upstrm Face

- no changes

Trash Rack

Heavy snow in
outlet channel, drifts
t.r. clear

BC Culvert

okay, no change

Spillway

clear, no blockage

Dustm Face

- Heavy snow
- no change

Toe Dustm:

- no changes noted

D.B.

Heavy snow from
last 3-weeks, wet
to crusted 1-2 ft deep
heavy drifts

Snowmobiles - very difficult
problems

out @ 12:54

Mill pond/dam

Good no changes

Pond frozen

APPENDIX 3

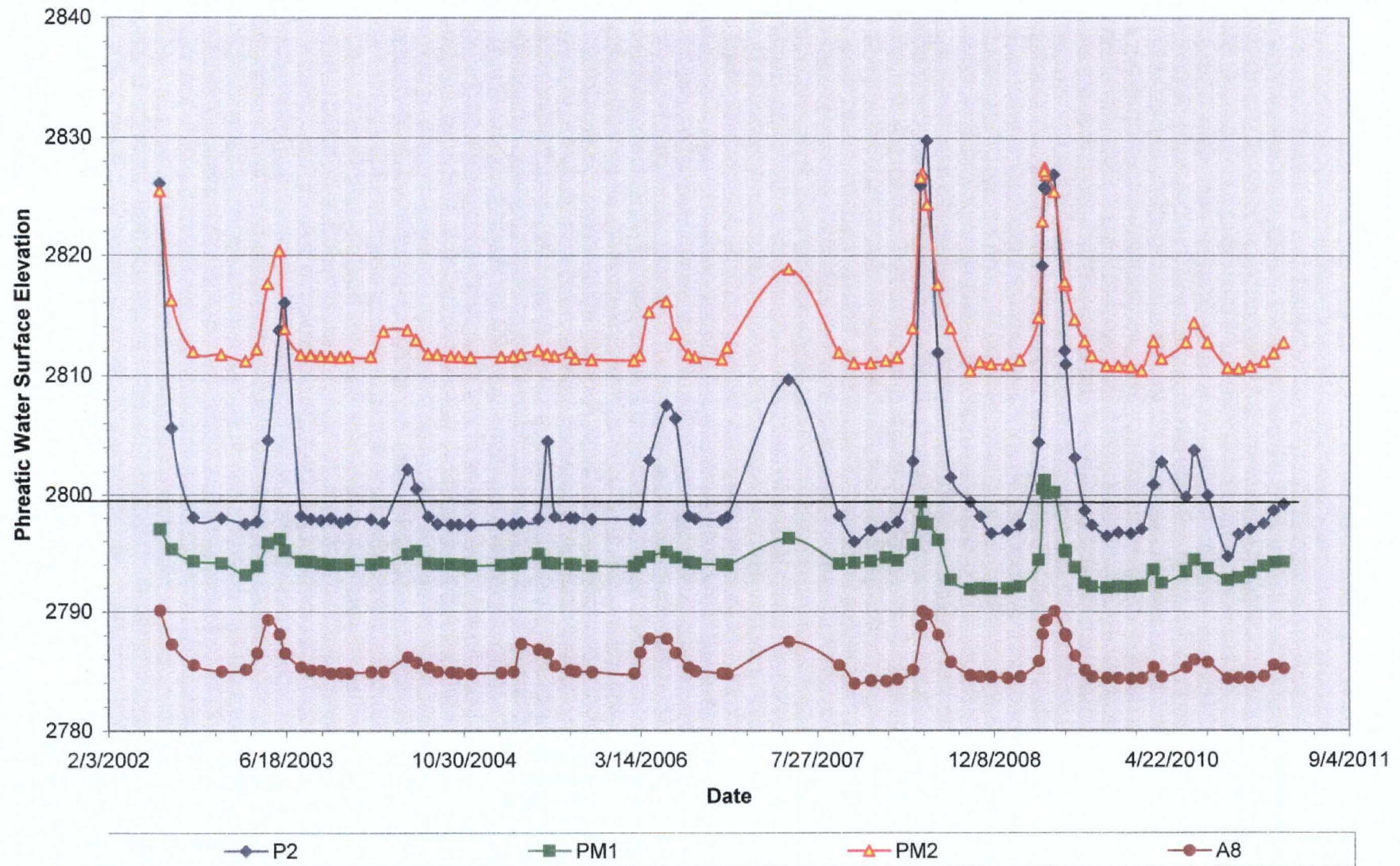
UPDATED PIEZOMETER DATA AND GRAPHS

	P	A8	P2	PM1	PM2	P1	P3	P4	P5	PM3	PM4	PM5	PM6
Date	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
4/24/2008	100.5	7.60	114.42	50.16	101.1	103.39	60.65	106.24	104.35	51.78	41.12	50.2	66.82
5/30/2008		2.71		48.2	88								
6/30/2008		2.93		48.36	90.71								
7/3/2008	100.34	4.65	105.4	49.73	97.49	101.9	dry	102.48	104.28	51.59	dry	dry	dry
8/8/2008	dry	6.97	117.8	53.12	101.1	dry	dry	dry	104.34	51.79	dry	dry	dry
10/1/2008		8.09		53.94									
1/15/2009	100.7	8.30	120.4	53.86	104.11	103.7	60.5	106.21	104.36	51.78	41.13	49.98	66.71
2/20/2009		8.20	119.9	53.69	103.75								
4/13/2009	101.55	6.88	112.87	51.43	100.24	103.8	60.4	106.05	103.44	51.78	41.1	50	66.8
4/24/2009	dry	4.59	98.18	45.37	92.13	103.68	dry	97.45	102.82	49.63	dry	dry	dry
4/30/2009	dry	3.48	91.55	44.66	87.81	dry	dry	91.28	99.09	49.69	dry	dry	dry
5/1/2009		3.44	91.45										
5/5/2009	dry	3.41	91.68	45.71	88.15	101.58	dry	98.97	98.71	dry	dry	50.8	
5/27/2009	dry	2.65	90.4	45.62	89.6	96.88	dry	88.25	97.97	50.12	41.51	dry	dry
6/26/2009	dry	4.57	105.24	50.6	97.24	1020.39	dry	102.21	104.25	50.02	dry	51.57	dry
6/29/2009		4.75	106.36										
7/24/2009	dry	6.42	114.13	52.07	100.41	dry	dry	dry	dry	50.02	dry	dry	dry
8/21/2009	dry	7.66	118.67	53.42	102.18	dry	dry	106.2	dry	dry	dry	50.04	dry
9/11/2009	dry	8.20	119.91	53.69	103.39	dry	dry	dry	dry	dry	dry	dry	dry
10/23/2009	dry	8.30	120.85	53.81	104.22	dry	dry	dry	dry	dry	dry	dry	dry
11/25/2009	dry	8.31	120.56	53.71	104.25	dry	dry	dry	dry	dry	dry	dry	dry
12/29/2009	dry	8.37	120.64	53.74	104.28	dry	dry	dry	dry	dry	dry	dry	dry
1/29/2010	dry	8.32	120.24	53.65	dry	dry	dry	dry			dry	dry	dry
3/3/2010	dry	7.37	116.42	52.25	102.02	dry	dry	dry	dry	dry	dry	dry	dry
3/26/2010	dry	8.19	114.49	53.39	103.62	dry	dry	dry	dry	dry	dry	dry	dry
6/3/2010	dry	7.40	117.15	52.44	102.27	dry	dry	dry	dry	dry	dry	dry	dry
6/25/2010	dry	6.75	113.52	51.41	100.67	dry	dry	dry	104.09	51.62	dry	dry	dry
8/2/2010	dry	6.96	117.35	52.15	102.3	dry	dry	dry	dry	51.76	dry	dry	dry
9/28/2010	dry	8.34		53.15	104.4	dry	dry	dry	dry	dry	dry	dry	dry
10/29/2010	dry	8.30	120.68	52.92	104.43	dry	dry	dry	dry	dry	dry	dry	dry
11/30/2010	dry	8.26	120.25	52.5	104.25	dry	dry	dry	dry	dry	dry	50.07	dry
1/7/2011	dry	8.15	119.76	51.95	103.85	dry	dry	dry	dry	dry	dry	50.07	dry
2/4/2011	dry	7.21	118.64	51.61	103.16	dry	dry	dry	dry	dry	dry	50.06	dry
3/4/2011	dry	7.48	118.1	51.58	102.3	dry	dry	dry	dry	dry	dry	51	dry

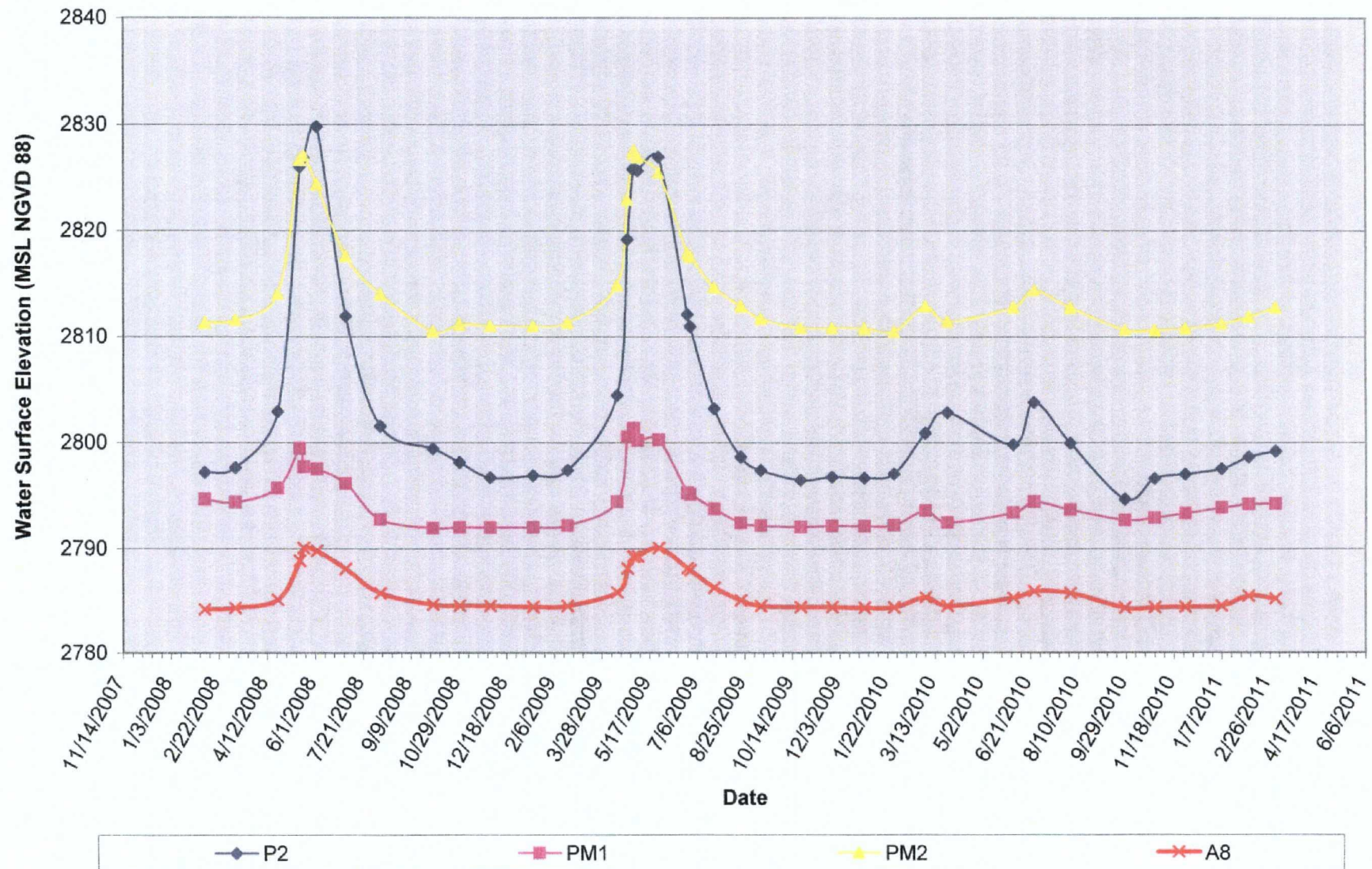
Piezometer Num P2 Elev.				PM1 Elev.			PM2 Elev.			A8 Elev.		
G.S.= 2917.321				G.S.= 2845.852			2915.04			G.S.= 2792.7		
Date	DW	TD	WS Elev	DW	TD	WS Elev	DW	TD	WS Elev	DW	TD	WS Elev
4/13/2009	112.87	122.1	2804.451	51.43	54.8	2794.422	100.24	104.6	2814.8	6.88	28.3	2785.82
2/20/2009	119.9	122.1	2797.421	53.69	54.8	2792.162	103.75	104.6	2811.29	8.2	28.3	2784.50
1/15/2009	120.4	122.1	2796.921	53.86	54.8	2791.992	104.11	104.6	2810.93	8.3	28.3	2784.40
12/1/2008	120.61	122.1	2796.711	53.9	54.8	2791.952	104.07	104.6	2810.97	8.21	28.3	2784.49
10/30/2008	119.17	122.1	2798.151	53.87	54.8	2791.982	103.91	104.6	2811.13	8.18	28.3	2784.52
10/2/2008	117.9	122.1	2799.421	53.94	54.8	2791.912	104.6	104.6	2810.44	8.09	28.3	2784.61
8/8/2008	115.78	122.1	2801.541	53.12	54.8	2792.732	101.1	104.6	2813.94	6.97	28.3	2785.73
7/3/2008	105.4	122.1	2811.921	49.73	54.8	2796.122	97.49	104.6	2817.55	4.65	28.3	2788.05
6/3/2008	87.52	122.1	2829.801	48.36	54.8	2797.492	90.71	104.6	2824.33	2.93	28.3	2789.77
5/20/2008	90.49	122.1	2826.831	48.17	54.8	2797.682	88	104.6	2827.04	2.67	28.3	2790.03
5/16/2008	91.34	122.1	2825.981	46.45	54.8	2799.402	88.4	104.6	2826.64	3.88	28.3	2788.82
4/23/2008	114.42	122.1	2802.901	50.16	54.8	2795.692	101.1	104.6	2813.94	7.6	28.3	2785.10
3/10/2008	119.65	122.1	2797.671	51.47	54.8	2794.382	103.53	104.6	2811.51	8.4	28.3	2784.30
2/7/2008	120.1	122.1	2797.221	51.2	54.8	2794.652	103.6	104.6	2811.24	8.56	28.3	2784.15
12/26/2007	120.34	122.1	2796.981	51.52	54.8	2794.332	103.98	104.6	2811.06	8.52	28.3	2784.18
11/9/2007	121.3	122.1	2796.021	51.65	54.8	2794.202	104	104.6	2811.04	6.75	28.3	2783.95
9/27/2007	119.12	122.1	2798.201	51.75	54.8	2794.102	103.12	104.6	2811.92	7.22	28.3	2785.48
5/8/2007	107.64	122.1	2809.681	49.57	54.8	2796.282	96.18	104.6	2818.86	5.22	28.3	2787.48
11/14/2006	119.21	122.1	2798.111	51.88	54.8	2793.972	102.72	104.6	2812.32	7.96	28.3	2764.74
10/30/2006	119.48	122.1	2797.841	51.82	54.8	2794.032	103.69	104.6	2811.35	7.92	28.3	2784.78
8/16/2006	119.39	122.1	2797.931	51.72	54.8	2794.132	103.51	104.6	2811.53	7.72	28.3	2784.98
7/28/2006	119.14	122.1	2798.181	51.61	54.8	2794.242	103.32	104.6	2811.72	7.42	28.3	2785.26
6/21/2006	110.89	122.1	2806.431	51.23	54.8	2794.622	101.62	104.6	2813.42	6.18	28.3	2785.52
5/27/2006	109.78	122.1	2807.541	50.76	54.8	2795.092	98.92	104.6	2816.12	4.98	28.3	2787.72
4/7/2006	114.34	122.1	2802.981	51.14	54.8	2794.712	99.79	104.6	2815.25	4.96	28.3	2787.74
3/12/2006	119.52	122.1	2797.801	51.62	54.8	2794.232	103.39	104.6	2811.65	6.18	28.3	2786.52
2/24/2006	119.44	122.1	2797.881	51.95	54.8	2793.902	103.79	104.6	2811.25	7.92	28.3	2784.78
10/27/2005	119.41	122.1	2797.911	51.94	54.8	2793.912	103.76	104.6	2811.28	7.81	28.3	2784.89
9/10/2005	119.32	122.1	2798.001	51.84	54.8	2794.012	103.66	104.6	2811.38	7.76	28.3	2784.94

Piezometer Num P2 Elev.				PM1 Elev.			PM2 Elev.			A8 Elev.		
G.S.= 2917.321				G.S.= 2845.852			2915.04			G.S.= 2792.7		
Date	DW	TD	WS Elev	DW	TD	WS Elev	DW	TD	WS Elev	DW	TD	WS Elev
8/27/2005	119.3	122.1	2798.021	51.78	54.8	2794.072	103.14	104.6	2811.9	7.68	28.3	2785.02
7/14/2005	119.22	122.1	2798.101	51.74	54.8	2794.112	103.46	104.6	2811.58	7.28	28.3	2785.42
6/24/2005	112.79	122.1	2804.531	51.68	54.8	2794.172	103.29	104.6	2811.75	6.22	28.3	2786.48
5/29/2005	119.42	122.1	2797.901	50.92	54.8	2794.932	103.01	104.6	2812.03	5.91	28.3	2786.79
4/10/2005	119.7	122.1	2797.621	51.72	54.8	2794.132	103.32	104.6	2811.72	5.42	28.3	2787.28
3/19/2005	119.82	122.1	2797.501	51.82	54.8	2794.032	103.49	104.6	2811.55	7.79	28.3	2784.91
2/13/2005	119.86	122.1	2797.461	51.87	54.8	2793.982	103.54	104.6	2811.5	7.86	28.3	2784.84
11/19/2004	119.9	122.1	2797.421	51.91	54.8	2793.942	103.59	104.6	2811.45	7.96	28.3	2784.74
10/17/2004	119.89	122.1	2797.431	51.84	54.8	2794.012	103.52	104.6	2811.52	7.91	28.3	2784.79
9/24/2004	119.91	122.1	2797.411	51.81	54.8	2794.042	103.49	104.6	2811.55	7.82	28.3	2784.88
8/17/2004	119.84	122.1	2797.481	51.79	54.8	2794.062	103.34	104.6	2811.7	7.79	28.3	2784.91
7/22/2004	119.21	122.1	2798.111	51.72	54.8	2794.132	103.29	104.6	2811.75	7.42	28.3	2785.28
6/18/2004	116.8	122.1	2800.521	50.69	54.8	2795.162	102.14	104.6	2812.9	7.01	28.3	2785.69
5/25/2004	115.14	122.1	2802.181	50.95	64.8	2794.902	101.34	104.6	2813.7	6.55	28.3	2786.15
3/19/2004	119.74	122.1	2797.581	51.68	54.8	2794.172	101.46	104.6	2813.58	7.8	28.3	2784.90
2/12/2004	119.45	122.1	2797.871	51.82	54.8	2794.032	103.52	104.6	2811.52	7.8	28.3	2784.90
12/10/2003	119.44	122.1	2797.881	51.86	54.8	2793.992	103.54	104.6	2811.5	7.91	28.3	2784.79
11/19/2003	119.72	122.1	2797.601	51.84	54.8	2794.012	103.59	104.6	2811.45	7.9	28.3	2784.80
10/21/2003	119.32	122.1	2798.001	51.84	54.8	2794.012	103.54	104.6	2811.5	7.94	28.3	2784.76
9/23/2003	119.51	122.1	2797.811	51.76	54.8	2794.092	103.49	104.6	2811.55	7.7	28.3	2785.00
8/26/2003	119.42	122.1	2797.901	51.62	54.8	2794.232	103.42	104.6	2811.62	7.68	28.3	2785.02
7/29/2003	119.16	122.1	2798.161	51.58	54.8	2794.272	103.38	104.6	2811.66	7.39	28.3	2785.31
6/14/2003	101.34	122.1	2815.981	50.62	54.8	2795.232	101.23	104.6	2813.81	6.22	28.3	2786.48
5/30/2003	103.62	122.1	2813.701	49.67	54.8	2796.182	94.67	104.6	2820.37	4.62	28.3	2788.08
4/28/2003	112.74	122.1	2804.581	50.02	54.8	2795.832	97.48	104.6	2817.56	3.41	28.3	2789.29
3/28/2003	119.62	122.1	2797.701	51.99	54.8	2793.862	102.91	104.6	2812.13	6.21	28.3	2786.49
2/24/2003	119.82	122.1	2797.501	52.74	54.8	2793.112	103.9	104.6	2811.14	7.62	28.3	2785.08
12/16/2002	119.34	122.1	2797.981	51.74	54.8	2794.112	103.36	104.6	2811.68	7.77	28.3	2784.93
9/30/2002	119.28	122.1	2798.041	51.55	54.8	2794.302	103.12	104.6	2811.92	7.22	28.3	2785.48
7/31/2002	111.72	122.1	2805.601	50.54	54.8	2795.312	98.87	104.6	2816.17	5.46	28.3	2787.24
6/28/2002	91.22	122.1	2826.101	48.82	54.8	2797.032	89.63	104.6	2825.41	2.62	26.3	2790.08

KDID Piezometers July 1, 2002 to March 04, 2011



KDID All "Wet" Piezometer Elevations 2008 - 2011



KDID Inflow at Upper Rainy Creek and Drian 6 Comparision

